

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ ES 2005/070010

A. CLASSIFICATION OF SUBJECT MATTER

IPC ⁷ C12N 15/29, C12N 15/70, C12N 15/82, A01H 5/00, C12Q 1/48

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC ⁷ C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EBI NUCLEOTIDES DATABASE, EBI PROTEIN DATABASES, CAPLU⁸, MEDLINE, BIOSIS, EMBASE, WPI, EPODOC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	BAROJA -FERNANDEZ, E., ET AL., " Sucrose synthase catalyzes de novo production of ADPglucose linked to starch biosynthesis in heterotrophic tissues of plants. Plant Cell Physiol. 2003, 44, 500-509. Mentioned in the application.	21-22, 25-26, 29-31, 33-35, 38, 40-43 1-20, 23-24, 27-28, 32, 36-37, 39
X A	ZRENNER R. ET AL, "Evidence for the crucial role of sucrose synthase for sink strength using transgenic potato plants" Plant. J. 1995, 7, 97-107. Mentioned in the application.	32 1-31, 33-43
X A	POZUETA ROMERO J. ET AL., " ADPG formation by the ADP-specific cleavage of sucrose-reassessment of sucrose synthase." FEBS Lett. 1991 Oct 21;291(2):233-7	29-31 1-28, 32-43

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

31 May 2005 (31.05.05)

Name and mailing address of the ISA/

SPTO

Authorized officer

Facsimile No.

Telephone No.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CHOUREY PS ET AL., "Genetic evidence that the two isozymes of sucrose synthase present in developing maize endosperm are critical, one for cell wall integrity and the other for starch biosynthesis". Mol Gen Genet. 1998 Jul;259(1):88-96.	23-24
A	SALANOUBAT ,M., ET AL., "Molecular cloning and sequencing of sucrose synthase cDNA from potato (Solanum tuberosum L.): preliminary characterization of sucrose synthase mRNA distribution". Gene 1987, 60:47-56	1-43
A	NAKAI T ET AL., "Expression and characterization of sucrose synthase from mung bean seedlings in E. coli". Biosci. Biotech. Biochem. 1997, 61, 1500-1503. Mentioned in the application.	1-43
A	NAKAI T ET AL., "An increase in apparent affinity for sucrose in mung bean sucrose synthase is caused by an in vitro phosphorylation or directed mutagenesis of Ser11" Plant. Cell Physiol. 1997, 39, 1337-1341. Mentioned in the application.	1-43
A	WO 9428146 A2 (HOECHST SCHERING AGREVO GMBH) 08.12.1994	1-43
A	WO 9910511 A1 (FORSCHUNGSZENTRUM JUELICH GMBH) 04.03.1999	29-33
X	WO 9803637 A1 (ARCH DEVELOPMENT CORP.) 29.01.1998 mentioned in the application.	34, 38
X	WO 02067662 A1 (PIONEER HI-BRED INTERNATIONAL INC.) 06.09.2002 mentioned in the application.	34,38
X	WO 0245485 A1 (COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION) 13.01.2002 mentioned in the application.	34,38

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Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Invention I: Claims 1 to 43 insofar as they refer to the recombinant sucrose synthases SSX and SS5, and to the use of an enzyme product.

Invention II: Claims 29 and 34 and their dependent claims, insofar as they refer to non-recombinant sucrose synthase.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/ ES 2005/070010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9428146 A2	08.12.1994	DE 4317596 A1 EP 0701617 A1 HU 74394 A2 US 5866790 A	01.12.1994 20.03.1996 30.12.1996 02.02.1999
WO 9803637 A1	29.01.1998	CA 2234068 A1 AU 3734997 A EP 0859832 A1 AU 728968 B2 US 6682918 B1	29.01.1998 10.02.1998 26.08.1998 25.01.2001 27.01.2004
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WO 02067662 A1	06.09.2002	CA 2438388 A1 US 2003005482 A1 EP 1389902 A1 HU 0303806 A2	06.09.2002 02.01.2003 25.02.2004 01.03.2004
WO 0245485 A1	13.06.2002	AU 2036302 A US 2002116736 A1 EP 1349446 A1 BR 0115782 A CN 1479569 A ZA 200303930 A	18.06.2002 22.08.2002 08.10.2003 20.01.2004 03.03.2004 21.05.2004